and φ being any function whatever. The author then details the processes by which he arrives at the solution of this latter problem.

March 17, 1836.

Sir JOHN RENNIE, Knt., Vice-President, in the Chair.

Major T. Seymour Burt, Bengal Engineers, was elected a Fellow of the Society.

A paper was read, "On the reciprocal attractions of positive and negative electric Currents, whereby the motion of each is alternately accelerated and retarded." By P. Cunningham, Esq., Surgeon R.N. Communicated by Alexander Copland Hutchison, Esq., F.R.S.

The author found that a square plate of copper, six inches in diameter, placed vertically in the plane of the magnetic meridian, and connected with a voltaic battery by means of wires soldered to the middle of two opposite sides of the plate, exhibited magnetic polarities on its two surfaces, indicative of the passage of transverse and spiral electrical currents, at right angles to the straight line joining the ends of the wires. The polarities were of opposite kinds on each side of this middle line, in each surface; and were reversed on the other surface of the plate. The intensities of these polarities at every point of the surface were greatest the greater its distance from the middle line, where the plate exhibited no magnetic action. The author infers from this and other experiments of a similar kind, that each electric current is subject, during its transverse motion, to alternations of acceleration and retardation, the positive current on the one side of the plate and the negative on the other, by their reciprocal attractions, progressively accelerating each other's motions, as they approach, in opposite directions, the edge round which they have to turn. After turning round the edge their motion will, he conceives, be checked by coming in contact with the accelerated portions of the opposing currents to which they respectively owed their former increase of velocity; so that the one current will be retarded at the part of the plate where the other is accelerated. To these alternate accelerations and retardations of electric currents during their progressive motion, the author is disposed to refer the alternate dark and luminous divisions in a platina wire heated by electricity, as was observed by Dr. Barker.

"Meteorological Journal kept at Allenheads, near Hexham." By the Rev. William Walton. Communicated in a letter to P. M. Roget, M.D., Sec. R.S.

This Journal contains a register of the height of the barometer, taken at 9 A.M. and at 3 P.M. during every day in January and February 1836, with remarks on the state of the weather during a few particular days. The station where the observations were made is elevated 1400 feet above the level of the sea.